



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/871,777	06/01/2001	Bogdan Kosanovic	TI-32882	3090
23494	7590	06/07/2006	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED			TO, JENNIFER N	
P O BOX 655474, M/S 3999			ART UNIT	
DALLAS, TX 75265			PAPER NUMBER	
			2195	

DATE MAILED: 06/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/871,777	KOSANOVIC, BOGDAN	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jennifer N. To	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 35-42 and 44-55 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 35-42, 44-55 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

1. Claims 35-42, and 44-55 are pending for examination.
2. Claim 38 is objected to because it is uncertain what claim 38 is dependent on (i.e. claim 35).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 35-42, and 44-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gopalakrishnan et al. (hereafter Gopalakrishnan) (U.S. Patent No. 6987729), and in view of Baker-Harvey (U.S. Patent No. 6385638).

5. As per claim 35, Gopalakrishnan teaches the invention substantially as claim including a method of managing digital signal processing in a single processor when inadequate processing resources are available in the processor to execute functions of a software process in a time period (abstract; col. 9, lines 51 through col. 10, line 5), comprising:

providing a plurality of functions of an adaptive algorithm in the software process that use the processing resources of the processor, wherein an

Art Unit: 2195

execution of each function is manageable (fig. 3; col. 4, lines 31-67; col. 5, lines 1-4);

allocating the processing resources among each function based on an estimated use of the processing resources by each function so as not to exceed the processing resources available in the processor in a time period (fig. 3; col. 2, lines 53-67; col. 3, lines 1-4; col. 4, lines 8-30; col. 5, lines 4-21; col. 6, lines 29-39).

Gopalakrishnan did not specifically teach controlling the execution of each function according to the allocation of the processing resources.

6. However, Baker-Harvey teaches controlling the execution of each function according to the allocation of the processing resources (abstract; col. 3, lines 30-46).

7. It would have been obvious to one of an ordinary skill in the art at the time the invention was made to have combined the teaching of Gopalakrishnan and Baker-Harvey because Baker-Harvey teaching of controlling the execution of each function according to the allocation of the processing resources would improve the integrity of Gopalakrishnan 's system by guarantees that each task (function) will always be able to run at least its minimal quality of service (Baker-Harvey, abstract).

Art Unit: 2195

8. As per claim 36, Gopalakrishnan teaches allocating the processing resources among each function based on an environmental input (col. 4, lines 51-64).

9. As per claim 37, Baker-Harvey teaches prioritizing the allocation of the processing resources among each function based on the estimated use of processing resources by each function and the achieved performance of each function according to a hierarchical priority scheme (col. 6, lines 13-31).

10. As per claim 38, Gopalakrishnan teaches prioritizing the allocation of the processing resources among each function based on the estimated use of the processing resources by each function and the achieved performance of each function according to a round-robin priority scheme (col. 8, lines 26-49).

11. As per claim 39, Baker-Harvey teaches removing a portion of the allocated processing resource from each manageable function that can execute using fewer processing resources than were initially allocating during the time period (col. 6, lines 3-10).

12. As per claim 40, Baker-Harvey teaches performing re-allocation of fewer of the processing resources to each function that are manageable for performance-degrading execution (col. 18, lines 58-63).

Art Unit: 2195

13. As per claim 41, Baker-Harvey teaches setting a low usage threshold of the processing resources; and reallocating more of the processing resources to each performance-degrade function when a cumulative usage of said processing resources by the functions fall below said low usage threshold based on the estimated consumption of said processing resources by each function and the achieved performance of each function (col. 4, lines 50-56; col. 5, line 19 through col. 6, line 31).

14. As per claim 42, Baker-Harvey teaches one of enabling function for execution, disabling to prevent execution, and degrading execution by allocating fewer processing resources if the function is capable of performance-degraded execution (abstract; col. 2, lines 45-67; col. 3, lines 1-29).

15. As per claim 44, Gopalakrishnan teaches providing an estimate of maximum processing resources required for execution of each function (fig. 3; col. 2, lines 53-67).

Baker-Harvey teaches monitoring actual use of the processing resources by the execution of each function (figs 1, 3); providing the estimated consumption for each function based on the original estimate and the actual use of the processing resources (figs. 1-3); and storing the estimate of the maximum required processing resource for execution of each function for the controlling of the execution of each function (figs. 1-4).

Art Unit: 2195

16. As per claim 36, it is rejected for the same reason as claim 35 above. In addition, Gopalakrishnan teaches plurality of communication channels and a processor connected to communication channels (col. 3, lines 46-48; col. 9, lines 50-56).

17. As per claim 47-55, they are rejected for the same reasons as claims 36-42 above.

### ***Response to Arguments***

18. Applicant's arguments with respect to claims 35-42, and 44-55 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bonnell et al. (U.S. Publication No. 2002/0178262), Syvaniemi (U.S. Patent No. 5918049), Bishop et al. (U.S. Patent No. 5115505), Phaal (U.S. Patent No. 6055564), Kauffman (U.S. Patent No. 6633916), and Aiken et al. (U.S. Patent No. 6625709) teach dynamic resource allocation and dynamic load balancing.

Stankovic et al., ("Strategic Directions in Real-Time and Embedded Systems", 1996, ACM, Vol. 28, No. 4, Pages 751-763) teaches real-time embed system with dynamic resource allocation.

Art Unit: 2195

20. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer N. To whose telephone number is (571) 272-7212. The examiner can normally be reached on M-T 6AM- 3:30 PM, F 6AM- 2:30 PM.

22. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 2195

23. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jennifer N. To  
Examiner  
Art Unit 2195

  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100